

Special Features: Conference Report

The “Modern Approaches to Investigating Cultural Evolution” meeting was held in the Department of Anthropology, University College London, UK, November 9th 2007.

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Cultural evolutionary studies have a controversial history. Most anthropologists and archaeologists have understood cultural evolution to mean a directed and progressive increase in social and political complexity over time (1). In contrast, modern approaches use the term evolution in the sense that biologists do: To indicate descent with modification. Many analogies exist between biological and cultural evolution and are hypothesised to reflect Darwinian processes acting on cultural systems (2-4). Modern evolutionary theory thus provides a powerful systematic framework within which to address questions about human cultural diversity and changes in cultural behaviour over time.

The Modern Approaches to Investigating Cultural Evolution workshop was organized by the London Evolutionary Research Network (LERN: <http://londonevolution.net>) in association with the AHRC Centre for the Evolution of Cultural Diversity (CECD: <http://www.ucl.ac.uk/cecd/home/>), with the aim of bringing together new researchers applying evolutionary theory to cultural systems. Attendees came from a wide range of academic disciplines and institutions across the UK and Europe.

Cultural Evolution is not simply concerned with the dim and distant past, and our first speakers demonstrated how evolutionary principles can enlighten complex phenomena in industrialised nations. Anne Kandler (AHRC Centre for the Evolution of Cultural Diversity, UCL) began with a presentation of mathematical models to explain the temporal and spatial variation in the uptake of costly goods, with a case study exploring the adoption of hybrid corn variants in the United States between 1930 and 1950. The combination of two existing mathematical models – a social learning model (5), and a threshold heterogeneity

model (6)– was able to produce patterns of “new product diffusion” that resemble those seen in the uptake of the hybrid corn, with characteristic long tails at the beginning and end of the adoption process. Nicolas Maystre (Department of Political Economics, University of Geneva) then used data from the World Values Survey (<http://www.worldvaluessurvey.org/>) to show empirically that an increase in international trade over the last two decades has led to a decrease in cultural diversity, both within and between countries. Important future work will determine if the decrease in cultural diversity is due to even homogenization between all countries, or whether the cultural behaviours and values of many countries are changing to reflect those of the few, economically most powerful nations.

Researchers from the Language Evolution and Computation Research Unit at the University of Edinburgh showcased work that uses artificial language learning experiments to investigate the evolution of language and linguistic variation. Monica Tamariz presented work that made quantitative measures of changes in the degree of systematicity between the structure of forms and the structure of meanings during the process of learning. Hannah Cornish showed how languages can adapt to enable their own transmission, with efficient structure emerging from initially unstructured “artificial” languages. Such cultural evolutionary processes do not require highly modularised mental capacities for language, and thus challenge the more orthodox, “Chomskian” view that humans possess an innate grammar mechanism that has evolved by natural selection (7). Building on previous work in sociolinguistic studies and computer simulations, Gareth Roberts also showed how he is using the artificial language paradigm to investigate how people use linguistic variation as markers of group identification.

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Hugo Mercier (Institut Jean Nicod, Paris) explored how outlandish beliefs (such as alien abductions, conspiracy theories and religious beliefs) can be reconciled with our normally accurate ability to filter information from others and judge whether it is true (epistemic vigilance). Constructing a verbal model and aligning this with previous experiments, Mercier proposed that such beliefs are held because we possess a “confirmation bias”, that is, we seek or interpret evidence in ways that are in line with our existing knowledge, beliefs or expectations. Such a system was argued to be adaptive in our evolutionary past, but suffers from a mismatch in the present environment. The morning session was concluded by Gordon Ingram (Institute of Cognition and Culture, Queen’s University, Belfast) who is conducting studies of pre-school children’s “tattling” behaviour, i.e., the reporting of transgressions of peers to an authority figure. Ingram showed that tattling reports are normally



truthful, but are biased towards antisocial behaviour, and often focus on determining the limits of social norms. These results are consistent with the hypothesis that language has co-evolved with mechanisms of cooperation such as indirect reciprocity and has enabled greater enforcement of group norms.

After some interesting discussions over lunch the workshop resumed with a session demonstrating the application of phylogenetic methods to questions about cultural evolution. Quentin Atkinson (Institute of Social and Cultural Anthropology, University of Oxford) used data from Indo-European languages to show how the rates of change of lexical items are predicted by the frequency with which they are spoken; more frequently spoken words tend to evolve more slowly. Robin Ryder (Department of Statistics, University of Oxford) presented a new model of language evolution that can be applied to the phylogenetic reconstruction of historical relationships between languages. Whereas many previous methods assume a constant rate of evolution, this new method allows for certain periods of ‘catastrophic’ rate heterogeneity where many language traits can change at the same time. Fitting this model to Indo-European datasets produces age estimates for the origin of Indo-European languages that are older than the 6000 years favoured by many historical linguists, and closer to estimates made by Gray and Atkinson (8). Michael Dunn (MPI Psycholinguistics, Nijmegen, Netherlands) showed how phylogenetic comparative methods could be applied to the typological features of language to test hypotheses about the functional dependence between certain grammatical elements of languages. Phylogenetic methods address two issues that have plagued previous work in typology: the historical independence of the languages under consideration, and the statistical validity of the conclusions drawn from previous samples.

The final session of the day showcased a variety of approaches to investigating prehistory. Fiona Jordan (Department of Anthropology, UCL)

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focused on residency and inheritance patterns amongst Austronesian-speaking societies to show how phylogenetic comparative methods can be used to reconstruct the ancestral states of cultural traits. Such an approach is particularly useful as



many aspects of human social behaviour leave little or no trace in the archaeological record. Erick Robinson (Research School of Archaeology and Archaeological Science, University of Sheffield) introduced us to the preliminary stages of his research on the change in toolkits between the late Mesolithic and the early Neolithic in the LBK culture of northwest Europe, where he will apply contemporary evolutionary methods to test competing hypotheses to explain this change in material culture. Alex Mesoudi (Department of Social and Developmental Psychology, University of Cambridge) showed how laboratory experiments developed in social psychology can be used to reveal the details of cultural transmission biases and simulate long-term patterns of cultural macroevolution. The approach was illustrated by experiments that simulated the cultural transmission of prehistoric Great Basin projectile points (see 9). In the final presentation, Adam Powell (Centre for Genetic Anthropology, UCL) presented a series of computer simulations that showed that population size is an important factor in the accumulation of cultural skills. By using parameter values that represent plausible human demographic situations during the Pleistocene, Powell showed that demography was potentially a key factor in the Upper Paleolithic Transition.

Overall, the workshop highlighted the “broad church” nature of cultural evolutionary studies. Yet despite the diversity of methodologies and subjects encompassed by both speakers and attendees, knowledge of modern evolutionary theories enabled the main issues to be intelligible to all, thus allowing a valuable exchange of ideas and interpretations. We feel that modern evolutionary theory holds great potential in shedding light on many aspects of human cultural behaviour and that future work can only benefit from reaching out to researchers working in many disciplines. The workshop provided a valuable opportunity to intensify contacts between various research groups within Britain and across Europe. Due to the success of this meeting we plan to hold similar sessions in the future.

*Details of the workshop can be found by visiting <http://londonevolution.net>

Reference List

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